

WHAT IS CLAIMED IS:

1. A display apparatus for irradiating with light generated by a light source a light modulating element and forming a display image plane from the light which 5 is transmitted through or reflected by the light modulating element, comprising:

input image calculating means for performing predetermined calculation according to an input display signal;

10 light quantity controlling means for controlling light quantity irradiated onto said light modulating element according to a result of said calculation; and a memory for storing the display signal subjected to the calculation by said input image calculating 15 means, and thereafter for outputting the display signal to said light modulating element.

2. A display apparatus for irradiating light generated by a light source onto a light modulating 20 element inputting modulated signal formulated by converting a display signal inputted in an analog state into digital display signals and thereafter subjecting the digital display signal to a predetermined processing, and for forming a display image plane from 25 the light transmitted through or reflected by the light modulating element, comprising:

input image calculating means for performing

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predetermined calculation according to the display signal;

light quantity controlling means for controlling light quantity irradiated onto said light modulating element according to a result of said calculation; and an adjusting circuit for adjusting the display signal according to a result of the calculation,

wherein said adjusting circuit adjusts the display signal before the display signal in said analog state 10 are converted into digital display signal.

3. A display apparatus for irradiating light generated by a light source onto a light modulating element, and for forming a display image plane with the light transmitted through or reflected by the light modulating element, comprising:

input image calculating means for performing a predetermined calculation according to an input display signal; and

20 light quantity controlling means for controlling
light quantity irradiated onto said light modulating
element according to a result of the calculation.

wherein said light quantity controlling means sets
a change rate of light quantity, such that the change
25 rate at decreasing the light quantity is smaller than a
change rate at increasing the light quantity.

4. A display apparatus for irradiating light generated by a light source onto a light modulating element, and for forming a display image plane from the light transmitted through or reflected by said light modulating element, comprising:

input image calculating means for performing a predetermined calculation according to an input display signals; and

10 light quantity controlling means for increasing or decreasing a light quantity irradiated onto said light modulating element step by step according to a value determined by result of said calculation,

15 wherein a threshold value at which said light quantity controlling means increases the light quantity from a first stage being a predetermined stage into a second stage increased therefrom by one step according to the calculation is different from a threshold value at which said light quantity controlling means decreases the light quantity from the second stage into 20 a stage of smaller light quantity.

5. The display apparatus according to claim 4, wherein said light quantity controlling means set so as to increase said light quantity from said first stage 25 to said second stage when the value determined by said calculation changes in the first direction to exceed the first threshold value, and so as to decrease said

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light quantity from said second stage to a stage of a
low light quantity when the value determined by said
calculation changes in the second direction being
opposite against said first direction to exceed the
5 second threshold value set in the side of said second
direction than said first threshold value.

6. The display apparatus according to claim 5,
wherein the stage of the low light quantity is said
10 first stage.

7. The display apparatus according to claim 1,
further comprising an adjusting circuit for adjusting
display signal according to a result of the
15 calculation.

8. The display apparatus according to claim 3,
further comprising an adjusting circuit for adjusting
display signal according to a result of the
20 calculation.

9. The display apparatus according to claim 4,
further comprising an adjusting circuit for adjusting
display signal according to a result of the
25 calculation.

10. The display apparatus according to claim 1,

wherein said calculation is calculation to give maximum luminance in said display signals inputted within a predetermined period.

5 11. The display apparatus according to claim 2,
wherein said calculation is calculation to give maximum
luminance in said display signals inputted within a
predetermined period.

10 12. The display apparatus according to claim 3,
wherein said calculation is calculation to give maximum
luminance in said display signals inputted within a
predetermined period.

15 13. The display apparatus according to claim 4,
wherein said calculation is calculation to give maximum
luminance in said display signals inputted within a
predetermined period.

20 14. The display apparatus according to claim 1,
wherein said calculation is calculation to give a
number of data exceeding a predetermined luminance
among luminance data included in said display signals
inputted within a predetermined period include.

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15. The display apparatus according to claim 2,
wherein said calculation is calculation to give a

number of data exceeding a predetermined luminance among luminance data included in said display signals inputted within a predetermined period include.

5 16. The display apparatus according to claim 3,
wherein said calculation is calculation to give a
number of data exceeding a predetermined luminance
among luminance data included in said display signals
inputted within a predetermined period include.

10 17. The display apparatus according to claim 4,
wherein said calculation is calculation to give a
number of data exceeding a predetermined luminance
among luminance data included in said display signals
15 inputted within a predetermined period include.

18. The display apparatus according to claim 1,
further comprising sensors for detecting light quantity
irradiated onto said light modulating element, wherein
20 said light quantity controlling means controls the
light quantity based on the calculation results and a
detection results by said sensors.

19. The display apparatus according to claim 2,
25 further comprising sensors for detecting light quantity
irradiated onto said light modulating element, wherein
said light quantity controlling means controls the

light quantity based on the calculation results and a detection results by said sensors.

20. The display apparatus according to claim 3,
5 further comprising sensors for detecting light quantity irradiated onto said light modulating element, wherein said light quantity controlling means controls the light quantity based on the calculation results and a detection results by said sensors.

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21. The display apparatus according to claim 4,
further comprising sensors for detecting light quantity irradiated onto said light modulating element, wherein said light quantity controlling means controls the light quantity based on the calculation results and a detection results by said sensors.

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22. The display apparatus according to claim 1,
comprising an adjusting circuit for adjusting display
20 signal according to said calculation result, and a sensor for detecting light quantity irradiated onto said light modulating element, wherein said adjusting circuit performing the adjustment according to the calculation result and the detection result by said
25 sensor.

23. The display apparatus according to claim 3,

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comprising an adjusting circuit for adjusting display signal according to said calculation result, and a sensor for detecting light quantity irradiated onto said light modulating element, wherein said adjusting 5 circuit performing the adjustment according to the calculation result and the detection result by said sensor.

24. The display apparatus according to claim 4, 10 comprising an adjusting circuit for adjusting display signal according to said calculation result, and a sensor for detecting light quantity irradiated onto said light modulating element, wherein said adjusting circuit performing the adjustment according to the calculation result and the detection result by said 15 sensor.

25. The display apparatus according to claim 1, comprising means for setting quantity of changing 20 irradiation light quantity, so as to set changing quantity or change rate of said irradiating light quantity.

26. The display apparatus according to claim 2, 25 comprising means for setting quantity of changing irradiation light quantity, so as to set changing quantity or change rate of said irradiating light

quantity.

27. The display apparatus according to claim 3,
comprising means for setting quantity of changing
5 irradiation light quantity, so as to set changing
quantity or change rate of said irradiating light
quantity.

28. The display apparatus according to claim 4,
10 comprising means for setting quantity of changing
irradiation light quantity, so as to set changing
quantity or change rate of said irradiating light
quantity.

15 29. The display apparatus according to claim 26,
wherein said change rate is greater in a trend to
increase irradiation light quantity than in a trend to
decrease irradiation light quantity.

20 30. The display apparatus according to claim 28,
wherein said change rate is greater in a trend to
increase irradiation light quantity than in a trend to
decrease irradiation light quantity.

25 31. The display apparatus according to claim 1,
wherein said light quantity controlling means are means
to be disposed between said light source and said light

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modulating element to control light quantity to be irradiated onto said light modulating element from said light source.

5 32. The display apparatus according to claim 2,
wherein said light quantity controlling means are means
to be disposed between said light source and said light
modulating element to control light quantity to be
irradiated onto said light modulating element from said
10 light source.

33. The display apparatus according to claim 3,
wherein said light quantity controlling means are means
to be disposed between said light source and said light
modulating element to control light quantity to be
irradiated onto said light modulating element from said
light source.

34. The display apparatus according to claim 4,
20 wherein said light quantity controlling means are means
to be disposed between said light source and said light
modulating element to control light quantity to be
irradiated onto said light modulating element from said
light source.

to control voltage or current to be supplied to said light source.

36. The display apparatus according to claim 2,
5 wherein said light quantity controlling means is means to control voltage or current to be supplied to said light source.

37. The display apparatus according to claim 3,
10 wherein said light quantity controlling means is means to control voltage or current to be supplied to said light source.

38. The display apparatus according to claim 4,
15 wherein said light quantity controlling means is means to control voltage or current to be supplied to said light source.

39. An image signal processing apparatus used in
20 a display apparatus for irradiating light generated by a light source onto a light modulating element, and for forming a display image plane from the light transmitted through or reflected by said light modulating element, comprising:

25 input image calculating means to performing predetermined calculation according to an input display signal;

means for outputting a control value for controlling light quantity irradiated onto said light modulating element according to a result of the calculation; and

5 a memory for storing display signal subjected to the calculation by said input image calculating means, and thereafter outputting the display signal to said light modulating element.

10 40. An image signal processing apparatus used in
a display apparatus for irradiating light generated by
a light source onto a light modulating element
inputting modulated signal formed by converting a
display signals inputted in an analog state into
15 digital display signals and thereafter subjecting the
converted digital signal to a predetermined processing,
and for forming a display image plane from the light
transmitted through or reflected by said light
modulating element, comprising:

20 input image calculating means for performing
predetermined calculation according to a display
signal;

means for outputting a control value for controlling light quantity irradiated onto said light modulating element according to a result of the calculation; and

an adjusting circuit for adjusting display signal

according to a result of the calculation,

wherein said adjusting circuit adjusts display signal before the conversion of the display signals in said analog state into digital display signals.

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41. An image signal processing apparatus used in a display apparatus for irradiating light generated by a light source onto a light modulating element, and for forming a display image plane from the light
10 transmitted through or reflected by said light modulating element, comprising:

input image calculating means for performing predetermined calculation according to an input display signal; and

15 means for outputting a control value to control light quantity irradiated onto said light modulating element according to a result of the calculation; and

wherein said control value is set such that a change rate at decreasing the light quantity is smaller
20 than a change rate at increasing the light quantity.

42. An image signal processing apparatus used in a display apparatus for irradiating light generated by a light source onto a light modulating element, and for forming a display image plane from the light
25 transmitted through or reflected by said light modulating element, comprising:

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input image calculating means for performing predetermined calculation according to an input display signal; and

means for outputting a control value to increase
5 or decrease a light quantity irradiated onto said light modulating element step by step according to a value determined by result of the calculation,

wherein a threshold value at which said means for outputting a control value outputs a control value to increase a first stage being a predetermined stage into a second stage by increasing said light quantity by one step corresponding to a value determined by said calculation is different from a threshold value at which said means output a control value decreased from 10 the second stage into a stage with less light quantity.